



Beyond Scheduling Basics: Analysis, Control, and Reserve Planning

Audience: Project team members who are responsible for planning, controlling and analyzing cost, schedule and technical performance of an activity, project, or contract.

Goal: This 8 hour course will build upon a basic understanding of Critical Path Method (CPM) scheduling by reviewing schedule analysis techniques that provide insight into schedule health and performance, evaluating the effect of changes to the baseline and controlling it, and examining strategies for planning schedule reserve.

Learning Objectives: Participants will be able to:

- Understand ways to assess when a project is likely to finish
- Determine if the schedule is realistic
- Gauge the significance of past schedule performance and trends
- Evaluate the effect of changes on the baseline and current operating schedules
- Assess the adequacy of schedule reserve and slack
- Identify risk in the schedule
- Understand how to control the schedule (including methods to accelerate the schedule or get back on track if behind plan)
- Understand the differences between schedule baselines, re-baselines, revisions, replans, and work around plans

Learning Methods: Lectures, discussions, demonstrations, and exercises

Key Topics:

- Integrated Master Schedule (IMS)
- Schedule reserve vs. schedule slack
- Schedule confidence levels
- Schedule risk
- Crashing and Fast Tracking
- Resource loading and leveling

Suggested Prerequisites:

- Understanding Project Scheduling (or equivalent)

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Module Name	Topics	Learning Objectives - Participants will be able to:
1.0 Introduction	<ul style="list-style-type: none">• Instructor/participant introductions• Agenda• Course Objectives• Icebreaker: The Success-Oriented Schedule	<ul style="list-style-type: none">• Articulate course objectives and outcomes
2.0 Project Scheduling Overview	<ul style="list-style-type: none">• Scheduling Overview• Policy Refresher: 7120.5, NASA Schedule Management Handbook• Integrated Master Schedule (IMS)	<ul style="list-style-type: none">• Understand the purpose and benefits of the project schedule• Understand the governing requirements for schedule management on NASA projects• Understand the concept of an Integrated Master Schedule (IMS)
3.0 Schedule Reserve Planning	<ul style="list-style-type: none">• 7120.5 Schedule reserve requirements• Types of schedule reserve• Reserve planning methods• Schedule confidence• Monte Carlo simulation	<ul style="list-style-type: none">• Understand the differences between schedule slack and reserve• Understand the differences between funded and unfunded schedule reserve• Recognize the pros and cons of where to place reserve in the project schedule• Understand the meaning of schedule confidence levels• Interpret the results of a Monte Carlo-based schedule risk analysis and how it can be used to establish a schedule reserve

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Module Name	Topics	Learning Objectives - Participants will be able to:
4.0 Schedule Analysis Techniques	<ul style="list-style-type: none"> • Critical path analysis • Monte Carlo-based schedule risk analysis • Resource leveling • Project Control Milestone performance and trending • Horizontal and Vertical schedule integration and traceability • Summarizing the schedule plan, performance and forecast for management • Reconciling the Schedule Variance and Schedule Performance Index from Earned Value with total slack • Variance analysis reporting • Forecasting schedule performance • What-If analysis • Reserve and slack trending • Multiple path convergence/merge bias • Crashing the schedule • Fast tracking the schedule 	<ul style="list-style-type: none"> • Determine when the project is likely to finish • Gauge schedule realism • Understand schedule performance and what work is slipping • Understand the relevance of extrapolating past schedule performance into the future • Assess how changes will affect the baseline and current schedule • Determine if the schedule reserve and slack is adequate • Identify where to find risk in the schedule
5.0 Schedule Control	<ul style="list-style-type: none"> • Baseline schedule revisions • Replanning • Workaround planning • Management Decision Making 	<ul style="list-style-type: none"> • Understand how to evaluate the effect of changes on the baseline schedule and current operating schedule • Distinguish between revisions and replans • Understand acceptable reasons for “rebaselining” • Identify actions project managers teams can take to keep on schedule, recover schedule, accelerate schedule, or minimize further delays



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6.0 Flight Project Case Study	<ul style="list-style-type: none">• Comprehensive case study of major schedule problems a typical flight project may encounter	<ul style="list-style-type: none">• Understand how to think critically and imaginatively in solving schedule problems from the NASA HQ, center management, project team and contractor perspectives